

**Impact fatigue-resistant wear-proof alloy cast iron**

**Patent number:** CN1100150  
**Publication date:** 1995-03-15  
**Inventor:** SHIJIE CAO (CN); XIAOLI ZHU (CN)  
**Applicant:** ZHUZHOU MACHINERY IND INST (CN)  
**Classification:**  
- **International:** C22C37/06  
- **European:**  
**Application number:** CN19930111686 19930909  
**Priority number(s):** CN19930111686 19930909

**Abstract of CN1100150**

The antiwear alloy cast iron resisting impact fatigue is produced by adding waste steel and Si, Mn elements to pig iron or iron alloy smelted with waste Cr-V-Ti slag, Ni slag and W slag through modification and strong toughening, and may be used to manufacture grinding balls and bar, hammer and lining. The times of impact fatigue are greater than 15 thousands and hardness is HRC 46-63 with a breaking rate less than 1%. It has high performance and low cost.

Data supplied from the esp@cenet database - Worldwide

IT 10043-11-5, Boron nitride (BN), uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (cubic, coating with; wear-resistant cutting tools manufactured with cubic boron nitride tip and multilayer hard coating)

IT 63850-89-5, 100CrMo6  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (machining of, tool for; cutting tools manufactured with cubic boron nitride tip and multilayer hard coating)

IT 12792-67-5 51881-53-9  
 RL: DEV (Device component use); USES (Uses)  
 (sintered, cutting tools with; wear-resistant cutting tools manufactured from sintered carbide alloy with cubic boron nitride tip and multilayer hard coating)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

- RE
- (1) Sandvik Aktiebolag; EP 0678594 A1 1995 CAPLUS
  - (2) Sandvik Aktiebolag; EP 0693574 A1 1996 CAPLUS
  - (3) Sandvik Aktiebolag; EP 0736615 A2 1996 CAPLUS
  - (4) Sandvik Aktiebolag; EP 0744242 A2 1996
  - (5) Toshiba Tungaloy Co Ltd; JP 8025112 A 1996
  - (6) Toshiba Tungaloy Co Ltd; JP A8025112 1996
  - (7) Udo, K; US 5503913 A 1996 CAPLUS

L11 ANSWER 26 OF 71 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1997:541134 CAPLUS  
 DN 127:251070  
 ED Entered STN: 25 Aug 1997  
 TI Structure and characteristics of grinding balls from white cats iron during chill casting  
 AU Poddubnyi, A. N.  
 CS Russia  
 SO Liteinoe Proizvodstvo (1997), (3), 7-10  
 CODEN: LIPRAX; ISSN: 0024-449X  
 PB Liteinoe Proizvodstvo  
 DT Journal  
 LA Russian  
 CC 55-8 (Ferrous Metals and Alloys)  
 AB Structure and characteristics of grinding balls from white cats iron during chill casting were determined for different chemical and phase compns. Wear resistance of white cast irons depends on type, amount, dispersivity and distribution of carbides as well as of the phase composition of the matrix.  
 ST grinding ball cat iron chill casting  
 IT Grinders  
 (grinding balls; structure and characteristics of grinding balls from white cats iron during chill casting )  
 IT Casting process  
 Wear  
 (structure and characteristics of grinding balls from white cats iron during chill casting )  
 IT 195607-66-0  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)  
 (structure and characteristics of grinding balls from white cats iron during chill casting )

L11 ANSWER 27 OF 71 CAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1995:828643 CAPLUS  
 DN 123:234515  
 ED Entered STN: 04 Oct 1995  
 TI Alloyed cast iron having improved impact resistance, fatigue strength, and wear resistance  
 IN Cao, Shijie; Zhu, Xiaoli  
 PA Zhuzhou Machinery Ind. Institute, Peop. Rep. China  
 SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.  
 CODEN: CNXXEV  
 DT Patent  
 LA Chinese  
 IC ICM C22C037-06  
 CC 55-3 (Ferrous Metals and Alloys)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1100150	A	19950315	CN 1993-111686	19930909

AB The cast iron contains C 1.70-3.60, Mn 0.20-2.20, Si 0.30-2.00, Cr 0.20-3.80, V 0.05-0.60, Ti 0.02-0.30, W 0.20, Mo, 0.50, Cu 0.10, Ni 0.10, (Nb + Ta) 0.12, Co 0.10, B 0.10, Re 0.02-0.20, Al 0.15, S <0.08, and P <0.12%. Preferably, the cast iron contains C 1.70-3.55, Mn 0.20-2.20, Si 0.30-1.80, Cr 0.20-3.80, V 0.05-0.50, Ti 0.02-0.25, W 0.10, Mo, 0.40, Cu 0.80, Ni 0.60, (Nb + Ta) 0.08, Co 0.06, B 0.08, Re 0.02-0.20, Al 0.12, S <0.07, and P <0.10%. The cast iron is manufactured from cast irons manufactured from Cr-V-Ti slag, Ni slag, and W slag with the addition of scrap, ferrosilicon, and ferromanganese.

ST alloyed cast iron impact resistance; wear resistance alloyed cast iron; fatigue strength alloyed cast iron

CT 168411-80-1P 168411-81-2P 168411-82-3P 168411-83-4P 168411-84-5P 168457-04-3P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(fatigue strength, impact resistance, and wear resistance of)

L11 ANSWER 28 OF 71 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1995:682803 CAPLUS

DN 123:61971

ED Entered STN: 19 Jul 1995

FI Manufacture of technical iron for steelmaking

IN Kempny, Antonin; Kratochvil, Jiri; Krayzel, Miroslav; Ciner, Petr; Idzikovsky, Boris

PA Vitkovice, s. p., Czech Rep.

SO Czech Rep., 4 pp.  
CODEN: CZXXED

DT Patent

LA Czech

EC C21B011-10

IC 54-2 (Extractive Metallurgy)

PAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CZ 278900	B6	19940817	CZ 1991-3932	19911220
PRAI	CZ 1991-3932		19911220		

AB Tech. iron containing C 2.00-4.3, Mn 0.1-1.00, Si 0.5, P 0.020, S 0.015, Cu 0.15, Ni 0.10, Cr 0.50, Mo 0.10, V 0.1, Ti 0.1, Al 0.05, and (Pb + Sb + As + Sn + Bi) 0.02% is produced from steel scrap, a C source, an oxidation agent, and a slag-forming additive by melting in a furnace and processing in a ladle. At most 50 weight% of the desired C is introduced into the melt after dephosphorization and before tapping. The remaining C is charged into the ladle in a powder form in a flowing inert gas. Typically, the product contains C 3.78, P 0.008, and S 0.004%. The amount of added C is highly controllable, and C dissoln. in the melt is high. The product is suitable for manufacture of steels and cast iron.

T tech iron charge steelmaking

T 11097-15-7P, Cast iron, preparation 12597-69-2P, Steel, preparation

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)  
(manufacture of tech. iron charge for production of)

T 37192-82-8P 165102-68-1P

RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)  
(manufacture of tech. iron charge for steelmaking)

L11 ANSWER 29 OF 71 CAPLUS COPYRIGHT 2004 ACS on STN

N 1995:325540 CAPLUS

N 122:139040

D Entered STN: 01 Feb 1995

I Method of abrasive wear testing in comminution processes

U Scieszka, Stanislaw F.

S Technical University Silesia, Gliwice, Pol.

O Tribologia (1994), 25(4), 352-63

CODEN: TRYBDE; ISSN: 0208-7774

B Oficyna Wydawnicza SIMPRESS

T Journal

A English

C 55-10 (Ferrous Metals and Alloys)

61 2 6247 2324

27 February 2004

SciFinder Scholar

Page: 2

## Bibliographic Information

Alloyed cast iron having improved impact resistance, fatigue strength, and wear resistance. Cao, Shijie; Zhu, Xiaoli. (Zhuzhou Machinery Ind. Institute, Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu (1995), 8 pp. CODEN: CNXXEV CN 1100150 A 19950315 Patent written in Chinese. Application: CN 93-111686 19930909. C:AN 123:234515 AN 1995:828643 CAPLUS (Copyright 2004 ACS on SciFinder (R))

## Patent Family Information

<u>Patent No.</u>	<u>Kind</u>	<u>Date</u>	<u>Application No.</u>	<u>Date</u>
CN 1100150	A	19950315	CN 1993-111686	19930909

Priority Application

CN 1993-111686	19930909
----------------	----------

## Abstract

The cast iron contains C 1.70-3.60, Mn 0.20-2.20, Si 0.30-2.00, Cr 0.20-3.80, V 0.05-0.60, Ti 0.02-0.30, W  $\leq$  2.00, Mo,  $\leq$  0.50, Cu  $\leq$  1.00, Ni  $\leq$  1.00, (Nb + Ta)  $\leq$  0.12, Co  $\leq$  0.10, B  $\leq$  0.10, Re 0.02-0.20, Al  $\leq$  0.15, S  $<$  0.08, and P  $<$  0.12%. Preferably, the cast iron contains C 1.70-3.55, Mn 0.20-2.20, Si 0.30-1.80, Cr 0.20-3.80, V 0.05-0.50, Ti 0.02-0.25, W  $\leq$  1.00, Mo,  $\leq$  0.40, Cu  $\leq$  0.80, Ni  $\leq$  0.60, (Nb + Ta)  $\leq$  0.08, Co  $\leq$  0.06, B  $\leq$  0.08, Re 0.02-0.20, Al  $\leq$  0.12, S  $<$  0.07, and P  $<$  0.10%. The cast iron is manufd. from cast irons manufd. from Cr-V-Ti slag, Ni slag, and W slag with the addn. of scrap, ferrosilicon, and ferromanganese.

## Patent Classifications

Main IPC: C22C037-06.

## Indexing - Section 55-3 (Ferrous Metals and Alloys)

168411-80-1P

168411-81-2P

168411-82-3P

168411-83-4P

168411-84-5P

168457-04-3P

Role: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(fatigue strength, impact resistance, and wear resistance of)

## Supplementary Terms

alloyed cast iron impact resistance; wear resistance alloyed cast iron; fatigue strength alloyed cast iron